Power Conversion

Power Conversion

For over two decades Blue Sea Systems has designed and manufactured products that operate between the source of power and the load. These products switch, protect, distribute and monitor both AC and DC systems. Drawing on experience gained from design, manufacturing, and customer service, Blue Sea Systems is introducing power conversion products, beginning with dimmers and battery chargers.

Dimmers have been part of the product offering over the years, but advances in LED and halogen lighting have emphasized the need for a new and more versatile dimmer. DeckHand Dimmers add new features, including a timed illuminated exit setting that allows boaters to safely and conveniently disembark before the lights automatically turn off.

Customers have asked for a battery charger with the latest technology and features that is built with the integrity and engineering expertise applied to every Blue Sea Systems product. Customers want a charger that can work anywhere, in any conditions, with any battery type, which is easy to install and intuitive to operate. They also demand a high level of product support for questions and troubleshooting. Blue Sea Systems new PACIFIC SERIES Battery Chargers meet these requirements and offer peace of mind with an industry-leading five year warranty.

Both the PACIFIC SERIES Battery Chargers and DeckHand Dimmers were designed by Blue Sea Systems engineers to improve the experience and safety of boating. Specifics about these new products are found on the following pages.

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NEW PACIFIC SERIES Battery Charger Remote Display
Shown in 360 Panel System

DeckHand Dimmer

PACIFIC SERIES Battery Chargers NEW

Applying two decades of electrical product design and manufacturing expertise, Blue Sea Systems has developed the PACIFIC SERIES Battery Chargers.

Research and testing of existing battery chargers revealed several shortcomings impacting the performance, and ultimately the experience, customers had with their product. Blue Sea Systems has improved charger performance by focusing on environmental factors, electronic design, and technical support.

The PACIFIC SERIES Battery Chargers, with their advanced multistage charging technology, are engineered to perform in harsh conditions.

Environment

Boats operate in challenging environments for any electrical or electronic device. The three conditions causing the greatest problems for chargers are moisture, heat, and low quality AC input voltage.

To combat moisture, the PACIFIC SERIES Battery Chargers have a drip-proof design with an integrated venting system protecting them from wipe downs and drips.

Heat is one of the greatest enemies of a battery charger. It stresses the electronic components and can cause premature failure. Instead of plastic or sheet metal cases, the Pacific Series' rugged, finned aluminum case dissipates heat and leads to longer battery charger life.

Low quality AC voltage can compromise many battery chargers. To overcome this, Blue Sea Systems developed Input Power Response (IPR) to match the charge output to the quality of the AC voltage input which reduces component stress.

Electronic Design

PACIFIC SERIES Battery Chargers use modern MOSFET circuitry instead of diodes for output power distribution. If diodes are used for this purpose, lower voltage is supplied to the battery requiring the most charge and higher voltage to the batteries that may already be charged, when equivalent voltages are required for optimum charging. MOSFETs improve efficiency, reduce heat and allow the PACIFIC SERIES Battery Chargers to offer these additional advantages:

1. **Capability for multiple battery chemistries (such as a mix of flooded and gel batteries):** PACIFIC SERIES Battery Chargers vary absorption stage voltage according to the chemistry selected by the user for each of the three battery banks.* This extends battery life and increases performance by providing each battery bank with the voltage specified for its particular chemistry.
   * Up to 0.5V difference between absorption voltages can be achieved.
2. **Optimum charging of different battery bank sizes with different charge states:** PACIFIC SERIES Battery Chargers vary absorption stage time according to the size and charge state of each battery bank to reduce overcharging.
3. **Compensation for voltage drop in cables from the charger to the batteries:** Conventional battery chargers sense battery voltage at the charger, while the voltage at the battery terminal is lower by the amount of voltage drop in the charging cables, resulting in longer charge times than necessary. PACIFIC SERIES chargers allow the user to compensate for this drop for faster charge times while not overcharging other connected battery banks.

Support

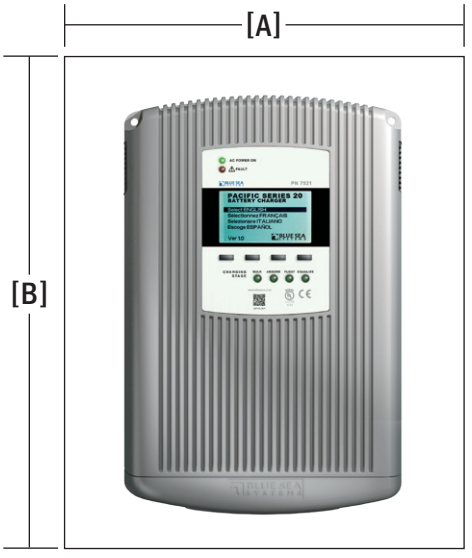
Battery charger status and fault conditions are typically indicated using a single ON LED or a combination of LEDs and simple onboard voltmeters. Deciphering the blinking lights, meters, and complex labels on many existing battery chargers is challenging. Poor status indication can lead to the misdiagnosis of a fault, resulting in costly repairs or replacement.

Blue Sea Systems' PACIFIC SERIES Battery Chargers have an integrated multi-language display for easy setup, monitoring, and diagnostics. This important feature ensures faults are easily identified and corrective procedures explained. An optional remote monitor offers a display and control at a navigation center or helm. With the purchase of a shunt, the remote monitor will also display amp hours and battery state of charge for one battery bank.

When assistance is required, poor technical support can occupy hours of time and cause frustration. Blue Sea Systems technical support is the company's priority. Members of the management and engineering teams spend one hour every weekday providing product support. Blue Sea Systems' foundation of customer care and technical support comes with every PACIFIC SERIES Battery Charger.

	PN	Description	Volts	Amps	Output	Recommended Mounting Clearance [A] Width in (mm)	Recommended Mounting Clearance [B] Height in (mm)
NEW	7521	Battery Charger	12V DC	20A	3	11.66 (296.16)	16.3 (414.02)
NEW	7522	Battery Charger	12V DC	40A	3	11.66 (296.16)	16.3 (414.02)
NEW	7523	Battery Charger	12V DC	60A	3	11.66 (296.16)	18.27 (464.06)

Mounting Clearance Diagram



Specifications subject to change. See bluesea.com for current information.

Electrical Performance

- **Universal line voltage 90-265V AC 50/60 Hz** for use anywhere, and is compatible with low voltage power sources
- **Power factor corrected** for efficient charging
- **MOSFET output** eliminates unintentional voltage differences between batteries providing a faster charge for batteries with the greatest amp-hour deficit

Mechanical Design

- **Rugged, finned aluminum case** for maximum heat dissipation
- **Integrated drip proof design** meets ABYC requirements
- **Conformal coated circuit boards**

Advanced Multi Stage Charging

- **Three outputs** provide charging for up to three battery banks
- **User selectable charge profiles** for lead acid, gel, AGM and new Thin Plate Pure Lead and Lithium Ion batteries
- **Battery Specific Charging (BSC) for different battery types and chemistries*** ensures each battery receives the optimal charge for long battery life
- **ACR integration–** disables ACR during BSC for individual battery charging profile
- **Battery temperature compensation** internal or with remote sensor
- **Battery Health Mode–** repeats the charge cycle weekly during storage or over extended periods
- **User selected battery equalizing function–** to revitalize wet acid batteries

* **Lithium Ion batteries cannot be combined with other battery types or chemistries**

Built In Safety Features

- **Ignition protected–** can be mounted in a gasoline powered boat's engine compartment or near batteries
- **Over and under temperature protection** for batteries
- **Overheating protection** for battery charger
- **DC over voltage protection**
- **AC reverse polarity protection**
- **Surge and short circuit protection**

Large Bright Backlit Display

- **Charge current, charge voltage, and charge cycle** specific to each battery
- **Multi language**
- **Easy to read** for set up, monitoring, and diagnostics

Optional Remote Display

- **Repeats battery charger onboard display information in convenient location**
- **DC Amps–** net of charger input and loads for house battery
- **Amp-Hour and State of Charge** for house battery with purchase of PN 8255 DC shunt 500A DC/50mV
- **Three mounting options including:** surface, rear panel, or 360 Panel System

Warranty

- **Five year** with Blue Sea Systems commitment to support

Rugged, finned aluminum case
Acts as a heat sink and stands up to the harsh marine environment

Multi language display
Easy to read for set up, monitoring, and diagnostics with optional remote display

Battery Specific Charging (BSC)
Optimizes charge profile for a mix of battery types including Lead Acid, Gel, AGM, TPPL and Lithium Ion

Universal line voltage 90-265 VAC 50/60 Hz
For use anywhere, and is compatible with low voltage power sources

PACIFIC SERIES Battery Charger Remote Display
Shown in 360 Panel System

7519 is a stand alone unit that can be mounted in the 360 Panel System

	PN	Description	Voltage	Width in (mm)	Height in (mm)
NEW	7519	PACIFIC SERIES Battery Charger Remote Display	12V DC	4.88 (123.83)	4.75 (120.65)

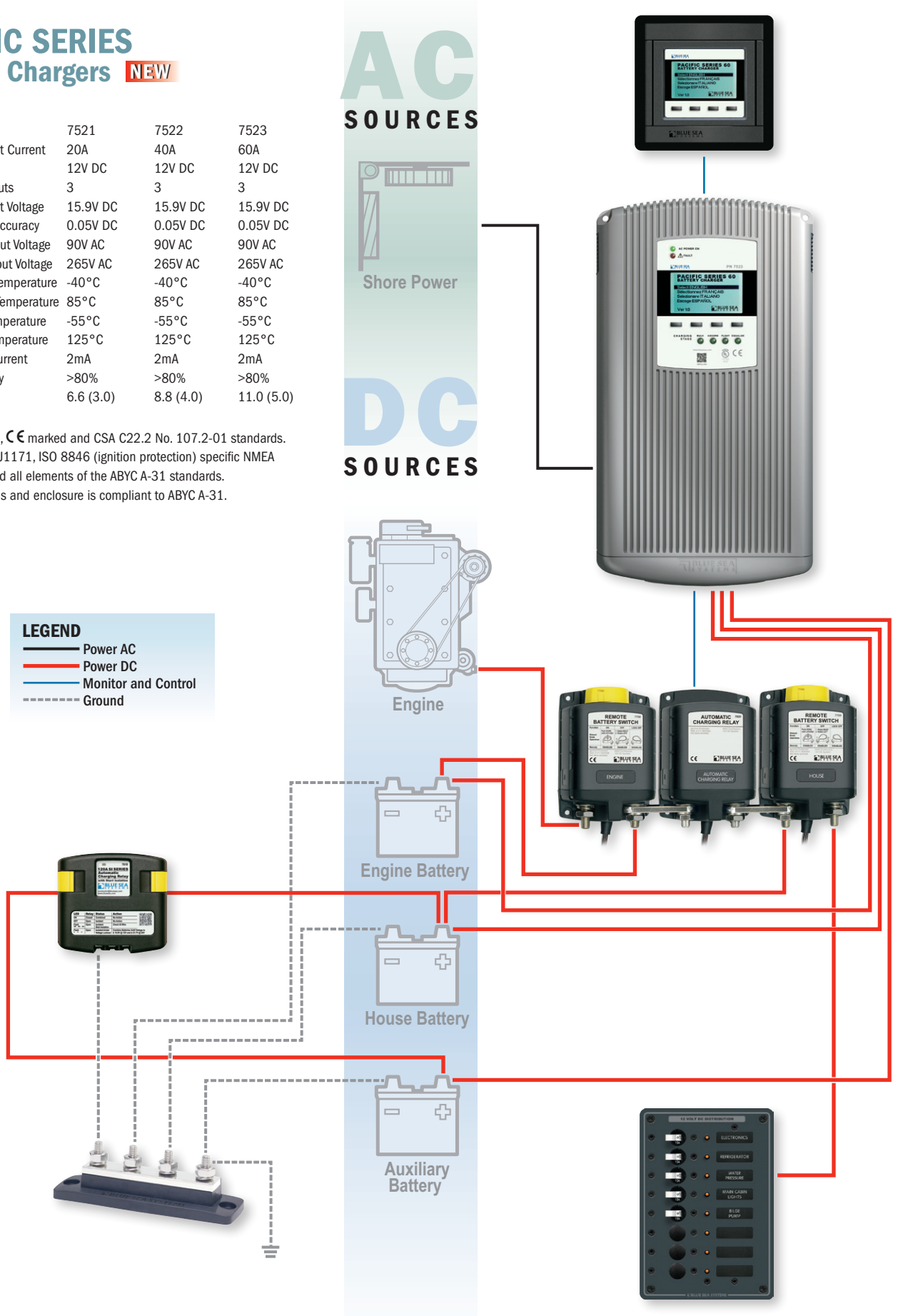
PACIFIC SERIES
Battery Chargers NEW

Specifications

Part Number	7521	7522	7523
Maximum Output Current	20A	40A	60A
Nominal Voltage	12V DC	12V DC	12V DC
Number of Outputs	3	3	3
Maximum Output Voltage	15.9V DC	15.9V DC	15.9V DC
Output Voltage Accuracy	0.05V DC	0.05V DC	0.05V DC
Minimum AC Input Voltage	90V AC	90V AC	90V AC
Maximum AC Input Voltage	265V AC	265V AC	265V AC
Min. Operating Temperature	-40°C	-40°C	-40°C
Max. Operating Temperature	85°C	85°C	85°C
Min. Storage Temperature	-55°C	-55°C	-55°C
Max. Storage Temperature	125°C	125°C	125°C
Max. Parasitic Current	2mA	2mA	2mA
Charger Efficency	>80%	>80%	>80%
Weight lb (kg)	6.6 (3.0)	8.8 (4.0)	11.0 (5.0)

Regulatory

UL 1236 marine, CE marked and CSA C22.2 No. 107.2-01 standards. SAE 1455, SAE J1171, ISO 8846 (ignition protection) specific NMEA requirements and all elements of the ABYC A-31 standards. Wire terminations and enclosure is compliant to ABYC A-31.



This diagram is for reference only. Consult an ABYC certified marine electrical professional for system design.

DC⎓

DeckHand Dimmers

Adjustable off for a timed illuminated exit

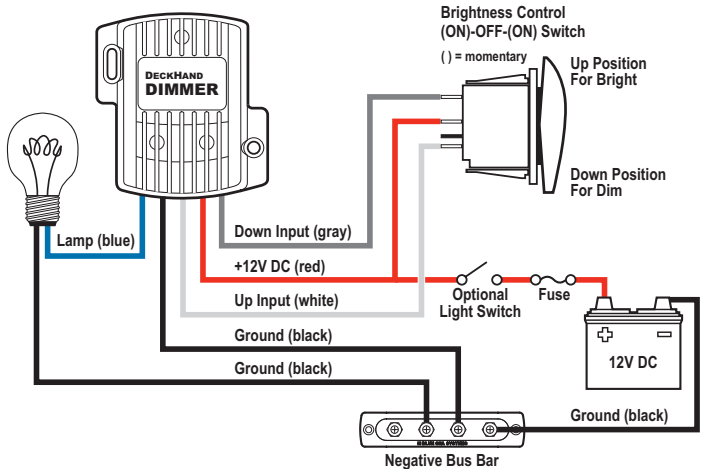
7508

8216 (included in retail package)
Pole/Throw: SPDT
Action: (ON)-OFF-(ON)

The timed illuminated exit setting allows boaters to safely and conveniently disembark before the lights automatically turn off.

Using the timed illuminated exit mode
One minute delay: Hold the switch in up position (bright) for 2 seconds. Lights will flash. Release switch after first flash and the lights will remain on for 1 minute.

Two to five minute delay: Hold the switch in up position (bright) for 1-4 seconds after the first flash. Release the switch after 2 to 5 flashes. The lights will remain on for 1 additional minute for each flash up to a maximum of 5 minutes.



Features

- Digitally controls dimming of non-regulated LEDs, incandescent, and halogen lights
- Memory for last dimmer setting
- Provides continuous pulse width modulation control from 0 to 100% of input voltage
- Bulb saver prevents excessive bulb aging during charging
- Offset mounting tabs allow multiple dimmers to be mounted close together
- Retail package includes momentary (ON)-OFF-(ON) switch 8216, see page 111

Specifications

Vn	**Nominal Voltage**	12 Volts DC
Operating Range		9V to 16V
Maximum Output Current		See table
Maximum Parasitic Current		<2mA
Temperature Rating		-40°C to 85°C

Regulatory

CE marked

Meets ISO 8846 ignition protection and

SAE J1171 external ignition protection requirements

PN	Imxo Amperage Maximum Output	Weight lb (kg)
7506	6 Amps	0.4 (0.18)
7507	12 Amps	0.58 (0.26)
7508	25 Amps	0.64 (0.29)

Retail package

Dimmer Cross Reference Chart

New PN	Amp Max. Operating	Nominal Voltage	Width in (mm)	Height in (mm)	Replaces PN	Amp Max. Operating	Nominal Voltage	Width in (mm)	Height in (mm)
7506	6 Amps	12V DC	3.25 (82.55)	3.5 (88.9)	7501	2 Amps	32V DC	1.7 (43.2)	2.05 (52.1)
7506	6 Amps	12V DC	3.25 (82.55)	3.5 (88.9)	7502	5 Amps	32V DC	2.2 (55.9)	3.06 (77.7)
7507	12 Amps	12V DC	3.25 (82.55)	3.5 (88.9)	7503	10 Amps	32V DC	2.2 (55.9)	3.06 (77.7)
7508	25 Amps	12V DC	3.25 (82.55)	3.5 (88.9)	7505	20 Amps	32V DC	2.2 (55.9)	3.06 (77.7)

Example of nested dimmer switches